RUINI, Carlo BIOG

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THE AUTHORSHIP OF CARLO RUINI'S "ANATOMIA DEL CAVALLO."

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Several reasons justify the desire of ascertaining the authorship of the drawings and text of the book on the anatomy of the horse first printed in Bologna in 1598 under the name of Carlo Ruini. This work was not only the first, but remained for a long time the best and most complete, treatise on equine anatomy and medicine; accordingly it was extensively copied and indeed became the basis of all subsequent advances in knowledge of the subject. Then the text contains views on the pulmonal and general circulation of the blood, which at the time were certainly revolutionary, even if in the main correct. Moreover the artistic excellence of some of these anatomical tables was not approached, even when reproduced; not till the appearance of the remarkable engravings of George Stubbs (1724-1806) published in 1766; whose splendid illustrations of the muscles of the horse, representing dissections made by the artist, were not completed by representations of the inner organs. Modern works on equine anatomy have been able to take advantage of methods of preservation and aids to dissection, together with photography and microscopy and are therefore more accurate and detailed. Nevertheless, for innate fire, artistry and animation the woodcuts of Ruini's work can still be considered supreme.

The illustrations of this book being obviously the work of a supreme craftsman, the desire to learn something about the life of the author was natural. Very little has been found out about Carlo Ruini, except that he was a lawyer and a Senator of Bologna; the date of his birth is unknown, that of his death uncertain, but can be assumed to be about 1598. The first edition of the treatise appeared in two volumes, the first of which was entitled " Anotomia del cavallo," and the second " Dell 'infirmità del cavallo " (Fig. 1). It will be noticed that the spelling of the word anatomy on the title page is erroneous, though correct elsewhere in the text. The printers are: Heredi di Giov. Rossi. The book is dedicated to Cardinal Pietro Aldrobandini, a nephew of Pope Clement VIII and Superintendent of the Pontifical Army. The preface of the first volume is dated 7 January, 1598, and is signed: Carlo Ruini. In this preface he states that it was an ancient custom of the Romans to consecrate after long service their horses to the gods and eternal repose; so it is traditionally reported that Cæsar, after passing the Rubicon, dedicated his well-deserving steed to Venus genitrix, from whom he pretended

to descend. In imitation of this example, Ruini continues, I have placed to rest my horse which has carried me about for many years. The writer then proceeds in a flowery panegyric of Cardinal Aldrobandini. In subsequent pages follows a preamble or " proemio," which opens with a praise of the horse and an appreciation of its usefulness in business, war and pleasure. Here Ruini says that he has ridden since childhood; he further states that he has studied the anatomy of the horse for the purpose of dealing with the diseases in a manner which would satisfy him and which, up to the present, had not been done. The anatomical portion of the work consists of 295 pages divided in five chapters. It may be mentioned that Table V bears on a tablet the clear date: MDXC.

The second book, which describes the diseases of the horse, also contains some prefatory notes, but these are of a general nature and not signed; the date is also 1598, but it may be that in the meanwhile Ruini had died. It consists of six chapters or " libri " and 386 pages.

This first edition is in the British Museum, where the two books are in one volume in a modern binding and wrong sequence, because the anatomy is obviously the first. This first edition came to notice after I had remarked in a previous paper in this journal that in my opinion the Venetian edition of 1599 (of which several specimens exist) was the first; being misled by the statement on the title page: " Opera nuova " and in the preface by the printer, Gasparo Bindoni, who says that he had obtained the text from the heirs of Ruini for the purpose of printing it. One may therefore presume that Ruini had died some time before. This mistake is shared with others, for example Sir Frederick Smith (1919) and Dr. Schmutzer (1913); the latter author, in a paper entitled " Bemerkungen zur Pferdeanatomie des Lionardo da Vinci," writes that the " Auskunftsbureau der deutschen Bibliotheken " had informed him that the Bologna 1598 edition was nowhere to be found. Similar views are expressed in several papers dealing with the subject and for this reason a photograph of the title page of the second volume of the Bologna edition is here reproduced, from the copy in the British Museum. (Fig. 1.).

The excellent illustrations will receive notice later on, but in the meanwhile the text claims attention, for by frequent comparisons and references it reveals a good knowledge of human anatomy; for example, in relation to the heart, eye and brain. As to the latter, the size of the " buttocks " of the human brain (in modern terminology, the hemispheres) is compared with those of the horse's brain; a rather long disquisition follows explaining that man having so much more imagination and phantasy, he requires larger organs to cool them down.

Then one may refer to the passage which has made some authors consider Ruini as a precursor of Harvey in the discovery

of the circulation of the blood. The few lines in question are found on pages 108-109 and may be thus translated: " The office of the right ventricles is to dispose of the blood which obtains from them the spirits of life and to nourish the lungs; of the left to receive this blood already prepared and convert one part in spirits, which give life and send the remainder with the spirits through the arteries to all parts of the body." (Fig. 2.) It will be easily seen that there is little which can bear a comparison with the complete work, thoroughly reasoned out and skilfully supported by dissections of different animals and experiments on the living which stand to the credit of William Harvey (1578-1657.) These views of Ruini may well have been obtained from the work of Matteo Realdo Colombo (1516-1559) " De re anatomica " or

DELL'INFIRMITA'
DEL CAVALLO
DI CARLO RVINI
SENATORE BOLOGNESE.
ALL'ILLVSTRISS^MO ET REVERENDISS^MO
MONSIGNORE CARDINALE
PIETRO ALDROBANDINI.

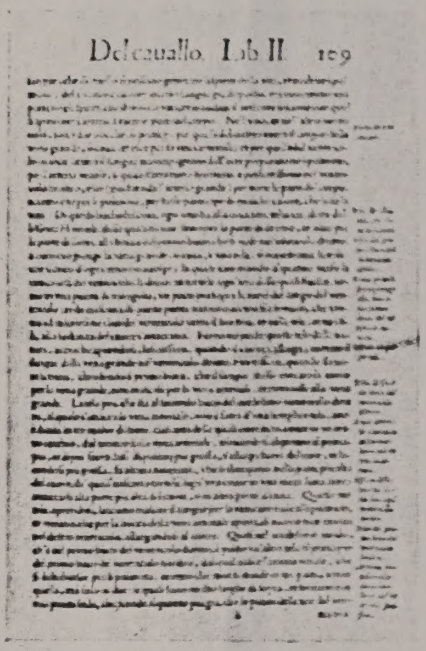

Del cauallo. Lib II 109

Fig. 1. Fig. 2.

that of Andrea Cesalpino (1524-1603) entitled " Questiones medicae " which appeared in 1593. The paragraph quoted (see Fig. 2) induced the veterinarian and historian, Giovanni Battista Ercolani to consider Carlo Ruini as a forerunner to Harvey in relation to the discovery of the circulation of the blood; this view was set forth in a book printed in 1873 and a tablet was placed on the walls of the University in Bologna recording Ruini's achievement.

A few words may be said about the Venetian edition; this is entitled " *Anatomia del cavallo, infermità ed i suoi rimedi,*" here the two books appeared together under one title page. Printer: Gasparo Bindoni il giovane, Venice 1599. The preface is written and signed by Bindoni, who mentions that Carlo Ruini

was a lover and breeder of good horses and that the text and illustrations had been found among the Senator's papers and handed to him for publication by the heirs of Ruini, amongst which the son Ottavio is mentioned, who had served in France under Henri IV, to whose son the book is dedicated. Print, paper and illustrations are an improvement on the previous edition.

That the work of Ruini influenced the development of equine anatomical knowledge can be surmised from the repeated editions which appeared in 1602, 1607, 1618. The text was translated into German by the physician Peter Uffenbach in 1603 and a French translation dealing with the diseases alone appeared under the name of Horace de Francini. This translation deserves some notice from several points of view. It is entitled " Hippiatrique du Sieur Horace de Francini, escuyer ordinaire du Roy, et capitaine des garennes de Bourgogne. Paris, chez Marc Orry, MDCVII." The work is dedicated to " Messire Rogier de Bellegarde, Grand Ecuyer de France."

It should be noted that the alleged author of the book places a " de " before his name, which presumes a right to nobility. The dedication is, however, signed: Horatio D. Francino, a somewhat different version. The dedication says: " Ayant à peine attaint l'age de douze ans, le Seigneur Charlot Ruyna gentilhomme boulonnais mon Oncle, me logeant chez soy, me donna le premier ply & m'enseigna les Rudimens de sa profession; que je peux dire avoir esté l'un des meuilleurs & scavants de son siècle; ie fus chez luy l'espace de douze ans etc." Francino therefore states that he was a nephew of Carlo Ruini and continues to say that wishing to go to France he joined another relative in Lyons; where having advanced in knowledge, he wrote the book on the diseases of the horse and sent the script to Ruini for his criticism, after whose death the manuscript had been published by his heirs. He proposes to deal with the anatomical portion later on. This account explains the incorrect statements which have found place in text-books and encyclopædias; that Ruini was a veterinarian (" he taught me the rudiments of his profession ") and that the book was published after his death. One may query Francino's claim that he wrote the part relating to the diseases; his French is that of a man unused to writing, the Italian of Ruini is remarkably clear and the literary style that of an educated man. Still one cannot understand why Francino should have gone to the trouble of inventing a relationship to Ruini, when he could have easily purloined the text without further ado, unless the Venetian edition was already well known in France, which it well might be. Francino indeed claimed having written for his uncle the part dealing with diseases. It is difficult to decide whether this was the case, but it can be said that the book on the diseases and treatment does not reach the level of lasting excellence shown by the anatomical

portion. Still, it must be understood that at the time veterinary medicine was considered a branch of agriculture and that in relation to the horse, attention was concentrated on horsemanship, a great deal of which seemed to consist in the invention of new models of screw-bits and cruel methods of training, whilst the remainder was strongly tinged with quackery and superstition. If this is taken into consideration, the work of Ruini can be rightly considered enlightened, for it presents what may be called common-sense views. In the text he shows a good practical knowledge of equine ailments and reveals himself as a humane horse master; thereby differing from contemporary farriers, like Filippo Scacco (1591), whose crude illustrations are reproduced in Sir Frederick Smith's (1919) book.

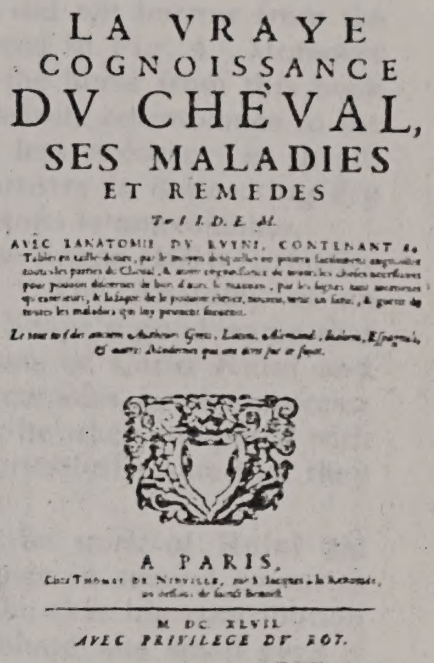

LA VRAYE
COGNOISSANCE
DV CHEVAL,
SES MALADIES
ET REMEDES
T. I. I. D. E. M.
AVEC L'ANATOMIE DV RVINI, CONTENANT &c.
A PARIS,
M. DC. XLVII.
AVEC PRIVILEGE DV ROY.

Fig. 3.

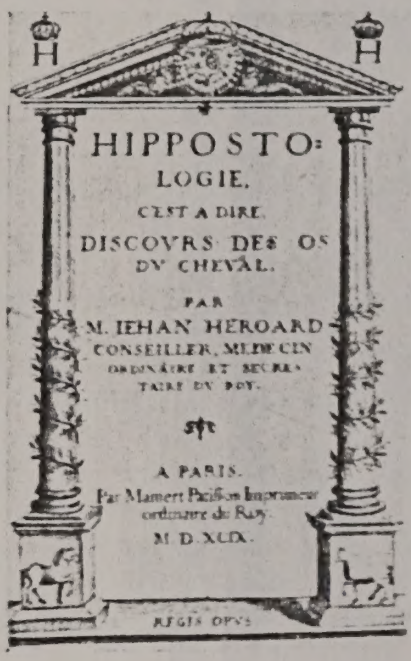
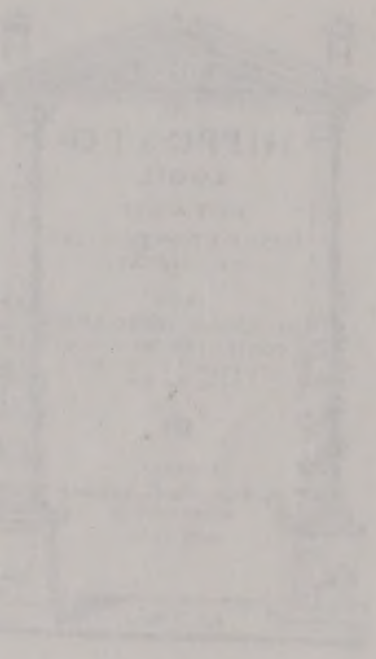


Fig. 4.

The anatomical portion was also reproduced in a French work called " La vraye cognoissance du cheval, ses maladies et remedes avec l'anatomie du Ruyni." Paris: chez Thomas de Ninville MDCXLVII. The author of this hides his name under the initials " I. I. D. E. M." which correspond to: Iean Iourdain Docteur en Médècine. (Fig. 3.) The book is remarkable from this point of view, that the preface contains the statement that the plates, which are reversed transfers from the " Anatomia del cavallo " are " une tres-ample et très-exacte Anatomie designée apres nature, par Titian tres fameux peintre de l'antiquité," etc. Titian died in 1576 and it is remarkable that Iourdain should have thought of him as the author of the drawings. This will be referred to further on, but in the meanwhile one can see how



a physician, who must have had some knowledge of clinical medicine, would approach the subject of the diseases of the horse; the approach consists in the literary method of compilation, that is by quoting one after the other various authors, like Vegetius, Apsyrtus, and so on.

It may be mentioned that the Court Physician, Jean Héroard (1561-?) published his " Hippostologie c'est a dire, discours des os du cheval " at Paris in 1599. This is a learned, well-written work, carefully illustrated and beautifully printed, dealing with the osteology of the horse. The description of the bones is good, though not better than that found in the text of Ruini and it is difficult to decide whether both authors did not borrow from the same source. The title-page is reproduced in Fig. 4. Moreover an illustration of the whole skeleton of the horse from this book is reproduced under Fig. 5; there is a definite resemblance to the corresponding plate in Ruini, though less accuracy in detail. Obviously there is not much scope for artistry in delineating dry bones and a certain similarity in all skeletons is unavoidable.

We now come to the work of Andrew Snape (1664-?), farrier to Charles II, who wrote the text of " The Anatomy of an Horse," London, 1683. It is a blot on Snape's good name that he copied (or had copied) the illustrations of Carlo Ruini and reversing them, introduced several inaccuracies in the process. However admirable his copper plates may be when compared with the woodcuts of Ruini, Snape could not truthfully state that they were original drawings.

The examples mentioned show that the work of Ruini did influence anatomical and veterinary practice in several countries for some considerable time after his death; that his contribution to the problem of the circulation of the blood was small even if important; that the excellency of his anatomical plates justify the suspicion that they must have been the work of a consummate artist working in conjunction with a skilled anatomist. The text we may admit as Ruini's possibly with a little guidance from a medically trained friend; but even that was not necessary; he may have read medical books. It has been seen that the name of Titian has been mentioned in relation to the drawings of Ruini's Anatomy: it is difficult to say on what grounds except that the supreme artistry of the illustrations was recognised.

The suggestion that the anatomical illustrations in Ruini's book are based on drawings by Leonardo da Vinci was originally made by Jackschat (1902) who considered that Ruini's work was a plagiary of the studies on the anatomy of the horse which Leonardo prepared for the Sforza monument; these studies, it is well known, lasted ten years (1483-1493) and resulted in a plaster cast, which was eventually destroyed by French soldiers which had invaded Milan in 1499. That Leonardo da Vinci has left records of many years of observations on the external anatomy of

horses is known and it would be indeed remarkable in view of the feverish activity and scientific curiosity which animated Leonardo to find that he did not go further than the surface. Jackschat, moreover, considered that Andreas Vesalius (1514-1564), for the purpose of completing his " De fabrica humani corporis," had purloined Leonardo's drawings of human anatomy, of which several books of notes and sketches are still extant. Roth (1907) opposed these views with what we may consider excessive zele and criticised several erroneous observations in Leonardo's note-books.

Regarding the anatomy of the horse, Schmutzer (1913) pointed out that only superficial drawings of the horse were known of

Fig. 5.

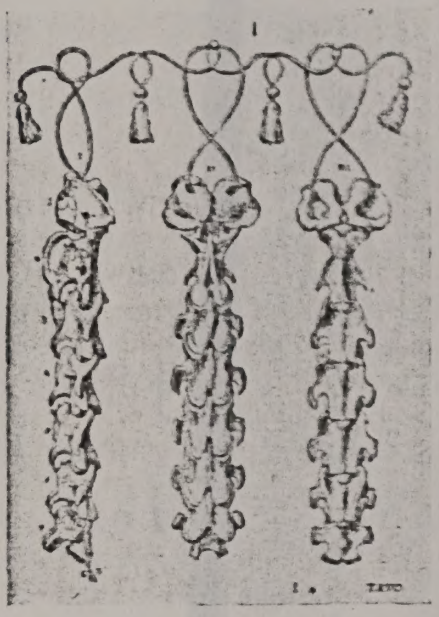


Fig. 6.

Leonardo and that these revealed on closer examination some errors in anatomical detail, due, according to Schmutzer, to Leonardo drawing from memory. A decision between these conflicting views has been much helped by a careful study on " Leonardo da Vinci, the Anatomist " by J. Playfair McMurrich (1930), in which the author has been able to study the question from the standpoint of a teacher of anatomy with a thorough knowledge of the relevant literature. In reading this book one is struck by finding that Leonardo had little or no classical learning and nevertheless he was influenced by several erroneous opinions in the anatomical treatise of Mondino de'Luzzi (1270-?1324), the only one he apparently knew. This smattering of knowledge brought him often in conflict with features he observed in his dissections and since we are dealing with a pioneer, it is not to be marvelled

that mistaken interpretations are frequently noticeable by the modern anatomist. Thus Leonardo represented a large blood vessel connecting liver and spleen. Another matter to be considered is that all Leonardo's anatomical work is recorded in his notebooks, which contain hastily jotted down observations extending over many years and which often refer to opinions which were eventually modified and corrected. Not only this but a peculiarity of Leonardo should be mentioned; that he allowed his imagination full play and would represent anatomical features, not so much as they were in reality but as they would be if their mechanical purpose were what he understood them to be. Thus he drew muscles as links or stays supporting schematised bones, and so forth. Moreover that he transposed organs, for example by drawing the larynx of a dog in the neck of a man, for purposes we can only surmise. These and many other points show that though he did intend preparing a treatise of anatomy and physiology, it was not medical anatomy he had in view, but rather he was investigating the subject from the standpoint of an artist and also a scientist. He thereupon reproduced human viscera, not because they might be the seat of disease, but because they supported the contour of the body and because they possessed functions about which he was curious. Moreover his artistic eye caused him to see and delineate his anatomical subjects as classical examples of athletic manhood and statuesque womanhood, which they can scarcely have been in reality.

McMurrich proves clearly that as an anatomist Leonardo da Vinci may be rightly considered as a scientific pioneer of the very first rank and that his influence on anatomical progress may not have been as limited as often supposed; that, for example, Albrecht Dürer (1471-1528) undoubtedly copied some of his drawings and that his influence on other contemporary artists must have been great, to judge from the oft quoted remarks of Giorgio Vasari (1512-1574). It is unfortunate that much of this is conjecture, however well documented, but the value and thoroughness of Leonardo as an anatomist had to be made clear for the purpose of explaining the connection with Ruini's drawings somewhat more convincingly than has been done by Jackschat and others.

Since Ruini does not mention the artist who obviously must have helped in the delineations, one may consider the suggestion of Schmutzer (1913); that a member of the "Accademia degli Incamminati" (freely translated: the "Academy of the advanced") and some anatomist from Bologna University helped Ruini in preparing the material and in making the drawings. Obviously these are suppositions and many other similar can be found in literature, but it is now possible to bring fresh information to bear on the problem.

On the basis of McMurrich's work there is now conclusive evidence that Leonardo became a skilled dissector and that in

connection with human anatomy he completed his study of the muscles by that of the inner organs and bones. Anyone who has seen some of the numerous sketches made by this truly remarkable Super-man, who with persistent assiduity in dozens and dozens of delineations reproduced drapery, flowing water and waves, facial expressions and many other fleeting appearances, will expect to find the movements and muscles of the horse together with the so-called "canons of proportion" represented in numerous designs, accompanied by notes in his neat mirror handwriting and colloquial Italian. These have been traced, but though the proportions of the horse are worked out with the utmost care and attention, the muscles traced and numbered, no designs of the inner organs have been found or recognised. A remarkable defect, and one cannot help thinking that they must have been made and were then appropriated by others.

A second point is that though Ruini states that he studied anatomy for the purpose of learning how to understand the treatment of the diseases of the horse, nevertheless, the drawings of the muscles of the horse are specifically artist's drawings, which consider the problems of foreshortening and delineation of movement, which are of no interest whatsoever to the anatomist.

Similar remarks apply to the osteology; for example, the reproduction of the vertebræ exhibits, it is true, absolute anatomical accuracy, but also an ornate knotting of ropes, together with a remarkable individuality of the tassels; this is absolutely in the style of Leonardo, who delighted in drawing for drawing's sake (see Fig. 6).

Then attention should be given to the necks of the horses on Plate V; these are abnormally thick, a feature which may be considered a distinctive mannerism of Leonardo, who intended the thick neck to balance the bulk of the body of the rider, for which the horse drawings were intended. (See Figs. 7 and 8.).

As an example of the fineness of details in some of the illustrations Plate I illustrating the nervous system of the horse may be reproduced; it may be doubted whether at the time any anatomist existed who was capable of giving such an accurate representation of the nervous system of any animal. (See Fig. 9.).

These objective observations seem to indicate that the illustrations of Ruini's anatomy of the horse may well have been based on sketches and drawings made by Leonardo and then scattered in his travels. A period of a hundred years would pass between the time of their execution and their publication and in the meanwhile the outstanding work of Vesalius, "De fabrica," would have appeared in 1543; this was definitely an anatomical work on medical principles and which as McMurrich points out, contains a mistaken delineation of the pelvis, which is correct in Leonardo's sketches. That Ruini was able to absorb medical knowledge can be seen in many pages of the text, which one may

concede was his, unless definite evidence to the contrary is forthcoming. Therefore it is difficult to understand why he should have adopted the artist's point of view in dealing with the

Fig. 7.

Fig. 8.

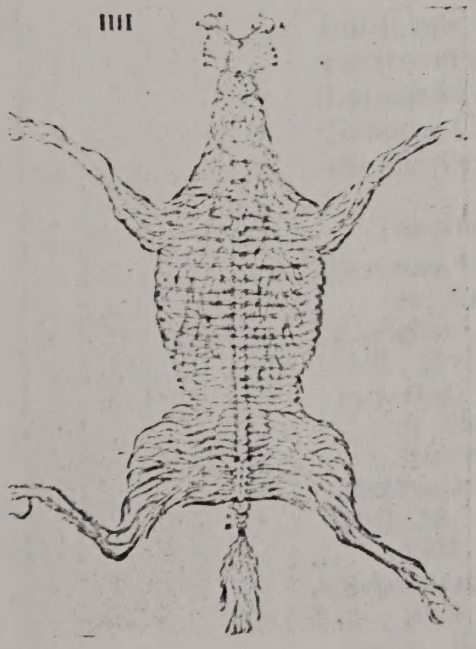


Fig. 9.

anatomy of the horse, unless he found the drawings ready-made in that style.

Before leaving the subject it may be mentioned that Leonardo

was intensely interested in the problem of what was eventually ascertained to be the circulation of the blood, though his anatomical dissections of the heart did not satisfy him that the Galenical doctrine of the blood movement was correct. He attempted to calculate the number of heart beats per hour and the volume of blood, both reckonings being inaccurate, one surmises through lack of suitable instruments. His philosophical outlook led him astray by suggesting the analogy of the movement of the waters from mountains along rivers to the sea; as an example of his trend of thought one may quote: "The origin of the sea is the reverse of that of the blood, for the sea receives into itself all the rivers which are totally produced from the aqueous vapours that have ascended into the air, while the sea of blood is the source of all veins" (from McMurrich An.A4). Some authors, like Holl (1911), Castiglioni (1934), hold that Leonardo came near discovering the circulation of the blood; admittedly, but not as near as Ruini. Therefore the source of Ruini's knowledge in this respect must be ascertained elsewhere.

One may therefore conclude that whilst the text of the book may have been compiled and written by Ruini, the drawings must have been founded on the work of a skilful anatomist working with a supreme craftsman. From the evidence of the sketches that remain and the style of the plates it can be suggested that Leonardo da Vinci's drawings served as a basis for a great part of those reproduced.

Real conclusive evidence probably will never be forthcoming, but if one sees the notable contribution made by McMurrich to the controversial question whether Vesalius borrowed anything from Leonardo or not, it may be possible in time to find the link between Senator Carlo Ruini and Leonardo da Vinci and decide how much the lawyer owed to the artist and scientist.

The works quoted are :—

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Holl. (1911). *Arch. für Anat. & Phys.*, 1911, p. 75.

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